

Ittipon Pituk 2014: Hydrological Studies of Ungauged Subbasins for Conservation and Restoration of Water Resources and Design Decision Making. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Associate Professor Chaiwat Kayankarnnavy, M.Eng. 178 pages.

The purpose of this thesis is to study data of hydrology for calculating run-off water using URBS model and to study characteristics of flood events and hydraulic flows in regions of sub-basin where there is no appropriately measuring station to be used for designing height of weirs or hydraulic structure. Subsequently, the results is used to analyze slope stability by using KUSlope software and to rearrange the importance of projects in term of economic, social, engineering and environmental matters in the use of designing and ruminating projects related to conservation and development of water resource.

The analysis of this study in term of state of flow in the sub-regions of Lumphachi Sub Basin, where are Ban Thamakam and Ban Kluai, using water level data in year 2005 for calibrating and investigating models derived by 2 measuring stations of Royal Irrigation Department consist of K.17 station and K.61 station. Moreover, this study is truly tested of data with water level data in year 2010, as well as rainfall data from flood event in year 2006, which was the disaster event for a 25 - year return period of rainfall, is also considered in the design of weir.

According to the efficiency of parameters assessed in the use of URBS models to assess the quantity of runoff water at K.17 station and K.61 station indicated that averaged statistics parameter for every event consist of correlation coefficient (r), which was 0.916 - 0.936, efficiency index (EI) was 75.365% - 87.23% and the value of root mean square error (RMSE) was 13.76 - 14.80 m^3/s . As the results obtained, the assessment of runoff water derived from 2 measuring stations using mean parameter were able to correlate with real situation hereby the parameter is highly true and able to be applied for designing the height of weir at Ban Thamakam and Ban Kluai, which are 3.5 m and 3 m with Factor of Safety of slope 1.25 – 3.60 respectively

Student's signature

Thesis Advisor's signature